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Amendment to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims

1. (Presently Amended) A diffusion-based method for detecting the activity of a bio/chemical species in the presence of a reactive constituent, the method comprising:

supplying a bio/chemical species to a finite volume diffusion channel, the finite volume diffusion channel comprising a longitudinal transport axis, a first measurement probe positioned at a first location along the longitudinal transport axis, and a second measurement probe positioned at a second location along the longitudinal transport axis;

supplying a reactive constituent ~~in fluid communication~~ to the finite volume diffusion channel, wherein the reactive constituent is in fluid communication with the bio/chemical species along the longitudinal transport axis and is known, or suspected of being reactive to the bio/chemical species;

~~measuring detecting the presence or absence of a diffusion response gradient~~ occurring between the bio/chemical species and the reactive constituent along the longitudinal transport axis by obtaining a differential measurement between the first and second measurements probes; and

~~correlating the presence or absence of the diffusion gradient measured diffusion response to a predefined baseline diffusion response to determine~~ the presence or absence of activity of the bio/chemical species in the presence of the reactive constituent.

2. (Original) The method of claim 1, wherein supplying a bio/chemical species to the finite volume diffusion channel comprises supplying a first concentration of the bio/chemical species to the finite volume diffusion channel, and wherein supplying a reactive constituent comprises supplying a second concentration of the bio/chemical species to the finite volume diffusion channel.

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3. (Original) The method of claim 1, wherein supplying a bio/chemical species to the diffusion channel comprises supplying a population of cells to the finite volume diffusion channel, and wherein supplying a reactive constituent comprises supplying an ionic species to the finite volume diffusion channel.

4. (Original) The method of claim 1, wherein supplying a bio/chemical species to the diffusion channel comprises supplying a population of cells to the finite volume diffusion channel, and wherein supplying a reactive constituent comprises supplying small molecules intended for therapeutic purposes to the finite volume diffusion channel.

Claims 5-7 are canceled.

8. (Presently Amended) A diffusion-based method for monitoring the rate of activity of a bio/chemical species in the presence of a reactive constituent, the method comprising:

supplying the bio/chemical species to a finite volume diffusion channel, the finite volume diffusion channel comprising a longitudinal transport axis, a first measurement probe positioned at a first location along the longitudinal transport axis, and a second measurement probe positioned at a second location along the longitudinal transport axis;

supplying a reactive constituent to the finite volume diffusion channel, wherein the reactive constituent is in fluid communication with the bio/chemical species along the longitudinal transport axis and is known or suspect of being reactive to the bio/chemical species;

measuring ~~the a~~ a diffusion rate of response occurring between the bio/chemical species ~~or and~~ and the reactive constituent along the transport axis by obtaining a differential measurement between the first and second measurements probes, the measured diffusion response indicative of the rate of activity of the bio/chemical species in the presence of the reactive constituent; and

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correlating the measured diffusion rate response of the bio/chemical species or the reactive constituent to a predefined baseline diffusion response to determine the rate of activity of the bio/chemical species in the presence of the reactive constituent.

Claims 9-10 are canceled.

11. (Original) The method of claim 8, wherein supplying a bio/chemical species to the diffusion channel comprises supplying a population of cells to the finite volume diffusion channel, and wherein supplying a reactive constituent comprises supplying an ionic species to the finite volume diffusion channel.

12. (Original) The method of claim 8, wherein supplying a bio/chemical species to the diffusion channel comprises supplying a population of cells to the finite volume diffusion channel, and wherein supplying a reactive constituent comprises supplying small molecules intended for therapeutic purposes to the finite volume diffusion channel.

Claim 13 is canceled.